

2001 Annual Report: Area-Wide Optimization Program in South Carolina

The South Carolina Department of Health and Environmental Control (Department) joined the Multi-State Pilot Program and implemented an Area-Wide Optimization Program (AWOP) in 1997. The goal of the Program has been to optimize particulate removal at all surface water treatment plants.

This report comprises an update of data that was collected during the 2001 calendar year. The report shows the original ten plants that have been tracked since 1997 as well as some new and updated success stories. Summary statistics are included on all surface water treatment plants for 2001. In addition, the report also contains a section on AWOP activities completed in South Carolina during 2001.

Data Update

The data for the surface water treatment plants (59 plants) have been updated. Several plants have shown improvement since the report covering the year 2000. Also, the overall scores and 95th percentiles for settled and filtered water have dropped from the 2000 levels. The appendix at the end of this report shows summary statistics and charts for all 59 surface water treatment plants.

The ten highest scoring plants from 1997 are shown in the table below. The table shows what has been done with those plants and the corresponding results.

Surface Water Treatment Plant Rankings in 1997

1997 Rank	Action Taken	Result of Action	2001 Rank*
1	Sanitary Survey	Lowered score from 873 to 439	4
2	Performed CPE	Lowered score from 822 to 264	14
3	Sanitary Survey	Lowered score from 775 to 224	18
4	Sanitary Survey	Lowered score from 733 to 353	11
5	Sanitary Survey	Built new SWTP, Performed CPE	5
6	Sanitary Survey	Best "success" story Lowered score from 694 to 59	41
7	Enforcement Action	Plant closed in 2001	NA
8	Sanitary Survey	Lowered score from 647 to 187	24
9	Sanitary Survey	Lowered score from 598 to 253	15
10	Sanitary Survey	Plant recently back online	NA

* Rank out of 59 Surface Water Treatment Plants.

During the annual sanitary survey at each surface water treatment plant, the optimization program is discussed. Charts and data are presented and discussed for the time period since the last survey of that water system. In most cases, this annual discussion has resulted in plant improvements.

Success Stories

As mentioned earlier, there have been several success stories in South Carolina. Success stories are plants that have significantly improved their performance since the start of the Program. There are many plants that could be discussed, but only the more significant improvers will be discussed in this report.

Greer CPW

The Greer Commissioner of Public Works WTP significantly improved their performance between 2000 and 2001. The plant has a regulated capacity of 16 MGD and serves approximately 46,000 people. Greer CPW was the first plant to undergo Performance Based Training in South Carolina. In 1997, there were 24 days when the settled water was greater than 2 NTU. Also in 1997 there were 212 days when the filtered water turbidity was greater than 0.1 NTU and on one of those days, the filtered water turbidity was 0.64 NTU. In 2001, there were only 5 days when the settled water turbidity was over 2 NTU and 35 days when the filtered water turbidity was over 0.1 NTU. From 1997 to 2001, the priority ranking score dropped from 252 to 59. The following chart shows their performance over those 4 years and the settled and filtered water turbidities.

Greer CPW

Year	Settled 95%	Filtered 95%	Score
1997	2.29 NTU	0.24 NTU	252
1998	3.1 NTU	0.34 NTU	290.5
1999	1.42 NTU	0.2 NTU	108
2000	1.96 NTU	0.2 NTU	97.5
2001	1.49 NTU	0.14 NTU	39

City of Newberry

The City of Newberry WTP was another success story in South Carolina in 2001. Their plant performance had significantly improved from previous years. In 1997 there were 76 days when the settled water was greater than 2 NTU and 72 days when the filtered water was greater than 0.1 NTU. They also had 1 day when the filtered turbidity was greater than 0.5 NTU and one day when it was greater than 1 NTU. Conversely, in 2001, there were 2 days when the settled turbidity was greater than 2 NTU and only 3 days when the filtered turbidity was greater than 0.1 NTU but less than 0.3 NTU. Also, their priority ranking score had dropped from in 1997 to in 2001. The following table shows the performance since 1997.

City of Newberry

Year	Settled 95%	Filtered 95%	Score
1997	3.11 NTU	0.21 NTU	268.5
1998	4.39 NTU	0.35 NTU	464.5
1999	1.74 NTU	0.28 NTU	266.5

2000	1.76 NTU	0.29 NTU	208.5
2001	1.11 NTU	0.07 NTU	52.5

Spartanburg Water System – R.B. Simms WTP

The Spartanburg Water System Simms plant showed significant performance improvement between 2000 and 2001. The RB Simms WTP is one of the largest plants in South Carolina. The plant is rated for 79 MGD at a filtration rate of 6 gpm/ft². The water system serves approximately 183,000 people. Spartanburg Water System is also an active member in the Partnership for Safe Water in South Carolina.

In 1997, the plant did not meet either of the optimization goals. There were 8 days when the settled water was greater than 2 NTU and 84 days when the filtered turbidity was greater than 0.1 NTU. In 2001, the settled turbidity was always less than 1 NTU and there were only 2 days when the filtered turbidity was greater than 0.1 NTU but less than 0.3 NTU. The following table illustrates the plant performance since 1997.

Spartanburg Water System

Year	Settled 95%	Filtered 95%	Score
1997	1.68 NTU	0.15 NTU	102
1998	3.40 NTU	0.14 NTU	161.5
1999	0.91 NTU	0.12 NTU	47
2000	0.98 NTU	0.23 NTU	68.5
2001	0.63 NTU	0.09 NTU	8

The use of the success stories helps to illustrate the success of the Area-Wide Optimization Program in South Carolina. There are many other surface water systems that have made improvements in their performance. Some water systems were already meeting or exceeding the goals of the program and were not mentioned. Each year there have been more systems that achieve optimized performance. In 1997, the first year of the Program, there was 1 plant meeting both goals. In 2001, there were 15 plants meeting both goals. The table below shows how many plants met the goals each year.

Plants Meeting Performance Goals

Year	# Plants
1997	1
1998	3
1999	7
2000	7
2001	15

AWOP Activities Completed

1. CPE's attended:
Cherokee, NC
*Camden, SC
*1 in-state CPE conducted in 2001
2. Performance Based Training
Dalton, GA, Greer, SC, Cherokee, NC – multiple meetings and training throughout the year
3. Quarterly meetings attended
Dalton, GA
Florence, AL
Burlington, NC
4. Presentations given - numerous technical presentations were given by all staff members. Some of them include:
SC AWWA Filter Assessment Workshops (3)
SC WTP Operators conference, Myrtle Beach
SC-GA AWWA joint section meeting, St. Simons Island
Advanced Drinking Water Treatment workshop, Atlanta, GA
DHEC internal monthly meeting on WTP optimization,
5. Publications
Filter Assessment Manual
Articles written about AWOP in DHEC publication "Newsleak"
DHEC End-of-year Report – paragraphs describing AWOP
Performance data given for CDWO website
AWOP included in DHEC Bureau of Water mission statement
5. Other activities
Filter assessment technical assistance
Jar testing technical assistance, Chesterfield SC
Discussion of AWOP during plant sanitary surveys
Specific duties assigned to each section member

Intangibles

As shown with the success stories, many of our SWTP's have improved their performance and made plant optimization a top priority. The performance data shows that neither plant size (population served) nor plant age hinder plants from becoming optimized. Several older plants continue to perform better than newer computerized plants. There are also several smaller plants that perform better than larger ones. When a list was published last year of those systems meeting the performance goals, several plants that were not on the list have told us that they are working very hard to be included on this year's list. Each year there are more systems that meet both of the optimization goals. An awards program is being developed to recognize optimized plants.

Conclusions

South Carolina DHEC drinking water staff remains very active in the Program and continually provides support to current member states and those who have recently joined the Program. The EPA sees the success of this program and is looking for ways to implement similar programs across the country. All staff members and upper management consider the Program a success and look forward to improved results in the future.